

### ABSTRACT

This invention is directed to pure and modified Ta<sub>2</sub>O<sub>5</sub> thin films deposited on suitable substrates and methods for making these Ta<sub>2</sub>O<sub>5</sub> thin films. These Ta<sub>2</sub>O<sub>5</sub> thin films exhibit superior properties for microwave communication, dynamic random access memory and integrated electronic applications. The Ta<sub>2</sub>O<sub>5</sub> thin films perform well in these types of technologies due to the Ta<sub>2</sub>O<sub>5</sub> thin film component which allows for high dielectric constants, low dielectric loss, and good temperature and frequency stability, thus making them particularly useful in high frequency microwave applications.